Despite years of research, even the most scrutinized Polyomaviruses - BK and JC - have not yet been thoroughly understood. With a number of new Polyomaviruses - KIV, WUV, MCV, HPyV6, HPyV7, TSV and HPyV9 described in the past few years, the need to understand how Polyomaviruses operate in their hosts has become even more urgent.

The probable route of transmission appears to be either respiratory or faecal-oral. The initial infection occurs most likely in the early childhood or early-adolescence and is followed by a life-long persistence. The seroprevalence of Human Polyomaviruses among healthy adult population is high: BKV (81-97 %), JCV (35-69 %), KIV (55 %), WUV (69 %), MCV (25-46 %) and TSV (70-80 %). Human Polyomaviruses can cause fatal diseases in immunocompromised patients.

The site of persistence in humans probably varies depending on the specific Polyomavirus. BK and JC are known to persist in kidneys and the urinary tract. Human Polyomaviruses have been detected in the lymphatic tissues, blood, respiratory, urinary, and gastrointestinal systems. It is not clear, however, if they persist in all of these sites.

Mechanisms which Polyomaviruses use to establish and maintain persistent infection could include the viral miRNA and viral agnoprotein, which would result in a modulation of viral proliferation and of the immune response. To some extent Polyomaviruses are capable of self-regulation.